In the claims

1. (currently amended) An imaging apparatus comprising:

an optical device configured to receive light and to provide a plurality of color components of the received light;

an image sensor including:

a plurality of color sensor arrays arranged elevationally over one another and configured to receive respective ones of the color components, and the color sensor arrays individually comprising a plurality of sensors configured to provide image data for a plurality of pixels of a respective one of the color components at an initial resolution; and

a processing mechanism,

wherein the plurality of color sensor arrays overlap and are offset with respect to one another to define a plurality of sub-pixels for individual ones of the pixels; and

processing circuitry configured to access the image data for pixels from each of the plurality of color sensor arrays, and using the accessed image data, to determine sub-pixel image data for the respective sub-pixels to form an image of an increased resolution compared with the initial resolution of the color sensor arrays,

wherein a given pixel of the pixels has a given sub-pixel having a plurality of red components including a given red component, a plurality of green components including a given green component, and a plurality of blue components including a given blue component,

and wherein the processing mechanism is to generate:

a blue intensity of the given sub-pixel based on a mean of the blue components multiplied by a sum of the given red component and the given green component, and divided by a sum of a mean of the red components and a mean of the green components,

a red intensity of the given sub-pixel based on a mean of the red components multiplied by a sum of the given blue component and the given green component, and divided by a

sum of a mean of the blue components and a mean of the green components, and

a green intensity of the given sub-pixel based on a mean of the green components multiplied by a sum of the given red component and the given blue component, and divided by a sum of a mean of the red components and a mean of the blue components.

2. (original) The imaging apparatus of claim 1, wherein the arrays comprise a plurality of photodetectors at individual pixels to detect respective color components of light.

3. (original) The imaging apparatus of claim 1, wherein each of the sub-pixels comprise red, green, and blue color components, and the plurality of color sensor arrays comprise red, blue, and green color sensor arrays.

4. (original) The imaging apparatus of claim 3, wherein overlapping of the red, green, and blue color sensor arrays enables determination of the image data at an increased number of physical locations within the individual ones of the pixels to create an image of a higher resolution at a sub-pixel level.

5. (original) The imaging apparatus of claim 1, wherein the increased resolution image is created by determining sub-pixel image data for individual pixels using the image data from each of the plurality of color sensor arrays.

6. (original) The imaging apparatus of claim 1, wherein the offsetting of the color sensor arrays is performed by physically shifting the plurality of color sensor arrays in a desired direction.

7. (previously presented) The imaging apparatus of claim 1, wherein the optical device is configured to output the color components in a direction which is the same as a direction of travel of the received light.

8. (previously presented) The imaging apparatus of claim 1, wherein the optical device is a prism.

9. (previously presented) The imaging apparatus of claim 1, wherein the color sensor arrays are configured in an offset arrangement with respect to one another and with respect to a direction of travel of the received light.

10. (currently amended) An imaging apparatus comprising:

an image sensing means implemented as a single device, and including:

a plurality of color sensor arrays, individual sensor arrays comprising a plurality of sensor means for providing image data for a plurality of pixels of a respective color component at an initial resolution;

wherein individual ones of the sensor arrays are arranged elevationally over one another in a layered stack of the image sensing means for individually detecting red, green, and blue components of light, respectively;

wherein the plurality of sensor means of respective color sensor arrays are arranged in an offset relationship with respect to one another in the single device for defining a plurality of sub-pixels for individual ones of the pixels; and

processing means for accessing the image data for at least one pixel from each of the plurality of color sensor arrays, and using the accessed image data, to form an image of an increased resolution compared with the initial resolution of the color sensor arrays,

wherein a given pixel of the pixels has a given sub-pixel having a plurality of red

components including a given red component, a plurality of green components including a given green component, and a plurality of blue components including a given blue component,

and wherein the processing means is for generating:

a blue intensity of the given sub-pixel based on a mean of the blue components multiplied by a sum of the given red component and the given green component, and divided by a sum of a mean of the red components and a mean of the green components,

a red intensity of the given sub-pixel based on a mean of the red components multiplied by a sum of the given blue component and the given green component, and divided by a sum of a mean of the blue components and a mean of the green components, and

a green intensity of the given sub-pixel based on a mean of the green components multiplied by a sum of the given red component and the given blue component, and divided by a sum of a mean of the red components and a mean of the blue components.

11. (previously presented) The imaging apparatus of claim 10, wherein the offset is achieved by a shift of layers of the sensor means in the image sensing means.

15. (original) The imaging apparatus of claim 10, wherein the sensor means are offset in a depthwise direction with respect to a direction of received light.

16. (original) The imaging apparatus of claim 10, wherein the processing means comprises means for determining the sub-pixel image data for the respective sub-pixels of an individual pixel using the accessed image data of the respective individual pixel, and the processing means further comprises means for forming an image of the increased resolution.

17. (currently amended) An image data processing method comprising:

providing image data using an image sensor, and the providing comprising:

receiving light travelling in a direction using an optical device;

using the optical device, providing the light into a plurality of light components corresponding to different wavelengths of the light and outputting individual ones of the light components in the same direction of travel of the received light;

receiving the light components using a plurality of color sensor arrays of the image sensor, wherein the color sensor arrays have an initial resolution;

generating image data using the color sensor arrays; and

accessing the image data from each of the plurality of color sensor arrays; and

forming an image having an increased resolution compared with the initial resolution of the color sensor arrays using the accessed image data,

wherein a given pixel of the image data has a given sub-pixel having a plurality of red components including a given red component, a plurality of green components including a given green component, and a plurality of blue components including a given blue component,

and wherein forming the image comprises generating:

a blue intensity of the given sub-pixel based on a mean of the blue components multiplied by a sum of the given red component and the given green component, and divided by a sum of a mean of the red components and a mean of the green components,

a red intensity of the given sub-pixel based on a mean of the red components multiplied by a sum of the given blue component and the given green component, and divided by a sum of a mean of the blue components and a mean of the green components, and

a green intensity of the given sub-pixel based on a mean of the green components multiplied by a sum of the given red component and the given blue component, and divided by a sum of a mean of the red components and a mean of the blue components.

18. (original) The method of claim 17, wherein the forming comprises:

determining sub-pixel image data from the accessed image data, and using the sub-pixel image data to form the image having increased resolution.

19. (original) The method of claim 17, wherein the image having increased resolution is formed at a sub-pixel level.

20. (previously presented) The method of claim 17, wherein the color sensor arrays overlap and are offset with respect to one another in the direction of travel of the received light.

21. (original) The method of claim 17, wherein the optical device is a prism.

22. (original) The method of claim 17, wherein the optical device is a lens.

27. (currently amended) An article of manufacture comprising:

a processor-usable medium comprising processor-usable code configured to cause processing circuitry to perform processing comprising:

accessing image data for at least one pixel from each of a plurality of color sensor arrays at an initial resolution; and

forming an image of increased resolution, compared with the initial resolution of individual ones of the color sensor arrays, using the accessed image data, wherein the color sensor arrays are offset with respect to one another providing a plurality of image data values for at least one color component for a single pixel location and wherein a sum of the image data values comprising intensity values for a single color component for the single pixel location are equal to an intensity value of the accessed image data for the single color component for the single pixel location,

wherein a given pixel of the image data has a given sub-pixel having a plurality of red

components including a given red component, a plurality of green components including a given green component, and a plurality of blue components including a given blue component,

and wherein forming the image comprises generating:

a blue intensity of the given sub-pixel based on a mean of the blue components multiplied by a sum of the given red component and the given green component, and divided by a sum of a mean of the red components and a mean of the green components,

a red intensity of the given sub-pixel based on a mean of the red components multiplied by a sum of the given blue component and the given green component, and divided by a sum of a mean of the blue components and a mean of the green components, and

a green intensity of the given sub-pixel based on a mean of the green components multiplied by a sum of the given red component and the given blue component, and divided by a sum of a mean of the red components and a mean of the blue components.